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INTEGRATED STORAGE OF HANDHELD CONTROLLER IN HEADSET

ABSTRACT

A head mounted display (HMD) or other display headset includes an integrated storage area concomitant with the lens region of the headset. The integrated storage area is used to store a handheld controller associated with the headset, with the added benefit of the handheld controller serving as a cover for the lenses of the headset.

BACKGROUND

Virtual reality (VR) and augmented reality (AR) systems often utilize a head mounted display (HMD) or other display headset to provide a user a 3D sense of presence in a VR or AR environment. To facilitate user interaction with the presented environment or to facilitate user control of various aspects of the VR/AR system, the user often employs a handheld controller containing various sensors that detect the manner in which the user has manipulated the handheld controller. However, the handheld controller, being relatively small compared to the headset and other components, is subject to being lost or misplaced.

DETAILED DESCRIPTION

FIGs. 1 and 2 illustrate rear perspective views of a headset and associated handheld controller. As shown in FIG. 1 the headset includes a housing having a surface facing the user's head (not shown) when the headset is mounted on the user's head (this surface referred to herein as the "user-facing surface") and an opposing surface (not visible in the view of FIG. 1) that faces away from the user's head. The headset further includes a set of straps or a harness to mount the housing on the user's head. The headset further includes one or more displays (not visible in the view of FIG. 1) to display stereoscopic imagery of a VR or AR

environment and a pair of lenses that are disposed at the user-facing surface and which serve to focus the user's view on the one or more displays.



FIG. 1 – headset with handheld controller deployed

As also shown in FIG. 1, the headset is associated with a handheld controller that includes one or more motion sensors, such as one or more of an accelerometer, a magnetometer, a gyroscope, and the like. In the view of FIG. 1, the handheld controller is deployed from the headset (that is, not stored at the headset). While deployed, the handheld controller operates to sense various motions imparted on the handheld controller through the user's manipulations of the handheld controller and then communicate information regarding these sensed motions to one or both of the headset or a separate control system (not shown).

When the headset and handheld controller are not in use, there is the risk of the handheld controller being misplaced due to its relatively small size. Accordingly, to reduce this risk, and to allow the headset and handheld controller to be conveniently transported together, the headset employs integrated storage for the handheld controller. As shown by FIG. 2 below, which depicts the handheld controller in storage at the headset, the integrated storage for the handheld controller is implemented at the user-facing surface of the housing. In particular, the integrated storage is employed in the bridge region of the user-facing surface that is surrounded by a face gasket and which includes the two lenses for the user's eyes. This bridge region is well-suited for storing the handheld controller as it typically is a relatively flat area so as to accommodate eyeglasses that a user may be wearing, and thus allowing the flat side of the handheld controller to lay flat against the housing of the headset. Further, because the handheld controller at least partially covers the lenses when stored in this region, storage of the handheld controller in this storage region has the additional benefit of providing protection for the lenses of the headset.

Any of a variety or combination of fastening means may be used to removably attach the handheld controller to the headset when not deployed. In some implementations, magnets are employed in the bridge region of the headset and corresponding magnets or ferrous structures

are employed in corresponding locations of the handheld controller, or *vice versa*.

Alternatively, mechanical snaps or hook-and-loop fasteners may be employed on the bridge region and the corresponding surface of the handheld controller. Still further, the face mask and bridge region could be formed to accommodate the housing of the handset controller such that an interference relationship (also known as “press-fit” or “friction-fit”) is formed between the housing of the handheld controller and the housing of the headset when the handheld controller is pressed into the bridge region of user-facing surface of the headset.



FIG. 2 – Headset with handheld controller stored

Thus, using the approach described above, the headset may provide integrated storage for the handheld controller, and thus providing a convenient package for transport of both items while reducing both the risk of misplacement of the handheld controller and the potential for damage to the lenses of the headset.